APPLICANTS:

FACTOR, Michael et al.

SERIAL NO.: FILED:

10/699,149 October 31, 2003

Page 3

AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled:

- 1. (Currently amended) A method for managing variable sized pages of possibly non contiguous blocks in a Non-Volatile-Storage (NVS) for attaining a consistent NVS image that survives malfunction events; each page includes a self describing block or a linked list of self describing blocks, the method comprising:
 - (a) providing auxiliary modules stored in Volatile Storage, wherein said auxiliary modules comprise free block database indicative of free blocks and association database representing replica of linked lists and partial linked lists, if any, of blocks in the NVS;
 - (b) providing an atomic "create a new page" procedure;
 - (c) providing an atomic "add block" procedure for adding a possibly non contiguous block to a page; the newly added block has a back pointer to a previous block in the page;
 - (d) providing a "delete page" procedure for deleting all blocks in a page, wherein said "delete page" procedure comprises:

while there are blocks in the page:

- moving from a first block to last through forward pointers in the association database and deleting a corresponding block in the NVS; a block in the NVS is returned to the free list only after there is no block pointing to it; and
- (e) providing at least one recovery procedure for rolling backward said add block procedure and rolling forward the delete page procedure, in case of malfunction event, thereby attaining consistent NVS.
- 2. -6. (Cancelled)

APPLICANTS:

FACTOR, Michael et al.

SERIAL NO.:

10/699,149

FILED:

October 31, 2003

Page 4

7. (Currently amended) A Non-Volatile-Storage (NVS) that includes variable sized pages of possibly non contiguous blocks; each page includes a self describing block or linked list of self describing blocks, using backward pointing scheme; said NVS is not susceptible to inconsistency in response to "create a new page", "add block to a page", or "delete blocks in a page" operations, irrespective of any intervening malfunction event,

wherein said NVS further having associated auxiliary modules stored in Volatile storage; the auxiliary modules comprise free block database indicative of free blocks and association database representing replica of linked lists and partial linked lists, if any, of blocks in the NVS, and

wherein said "delete page" procedure comprises;

while there are blocks in the page:

moving from first block to last through forward pointers in the association database and deleting a corresponding block in the NVS; a block in the NVS is returned to the free list only after there is no block pointing to it.

8.-12. (Cancelled)

13. (Original) A system for managing variable sized pages of possibly non contiguous blocks in a Non-Volatile-Storage (NVS) for attaining a consistent NVS that survives malfunction events; each page includes a self describing block or linked list of self describing blocks, the system comprising:

Volatile Storage storing auxiliary modules;

means for performing an atomic "create a new page" procedure;

means for performing an atomic "add block" procedure for adding a possibly non contiguous block to a page; the newly added block has a back pointer to a previous block in the page;

means for performing a "delete page" procedure for deleting all blocks in a page;

means for performing at least one recovery procedure for rolling backward said add block procedure and rolling forward said delete page procedure, in case of malfunction event, thereby attaining consistent NVS.

APPLICANTS:

FACTOR, Michael et al.

SERIAL NO.:

10/699,149

FILED:

October 31, 2003

Page 5

14. -15. (Cancelled)

16. (Original) The system according to Claim 13, for use in file systems that store meta-data on disk(s).

17. (New) The system according to Claim 13, wherein said auxiliary modules comprise free block database indicative of free blocks and association database representing replica of linked lists and partial linked lists, if any, of blocks in the NVS.

18. (New) The system according to Claim 13, wherein said malfunction event being an electricity power malfunction.

19. (New) The system according to Claim 13, wherein each block has the following data structure:

Block header that includes:

Block state: storing any of 'free'; 'used'; 'used-chained' values;

Entity identifier: storing entity identifier and applicable if state is not 'free';

Previous pointer: storing pointer to previous block in chain and applicable if

state is 'used-chained';

Block user data: storing data that pertains to protected entity.

20. (New) The system according to Claim 17, wherein said "add block" procedure comprises: applying atomic write that includes adding a block with a backward pointer to a previous block in the linked list of the page.

21. (New) The system according to Claim 17, wherein said "delete page" procedure comprises: while there are blocks in the page:

means for moving from a first block to last through forward pointers in the association database and means for deleting a corresponding block in the NVS; a block in the NVS is returned to the free list only after there is no block pointing to it.